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For people who care about the West

Richard Reynolds, raptor man

by Leath Tonino

The main cabin at Big Springs Field Station in northern Arizona's Kaibab National Forest isn't the prettiest; there's paint chipping from the floors and mouse poop in the corners. But the decorations cost about $9 million and took 20 years to collect. Oversized graphs, tables, maps and aerial photos crowd each other for wall space. Some tell the demographic history of the Kaibab Plateau's northern goshawk population since 1991, using data from hundreds of nests and banded birds. Others describe forest management strategies developed in conjunction with this research -- what U.S. Forest Service wildlife biologist Richard Reynolds calls the Goshawk Recommendations.

"I hope you're excited to participate in the biggest, longest, most intensive, and most fun study of the northern goshawk in the world," Reynolds says to a coffee-slurping crew of 14 summer field technicians. "You'll probably get hurt -- but not bad -- and you're going to hike and hike until you don't think you can hike anymore." It's a June morning, the beginning of the field season at Big Springs, and Reynolds is wearing his usual outfit: brown leather boots, crisp blue jeans, a large silver belt buckle in the shape of a bear's claw. His mustache is white, neatly trimmed. His T-shirt, selected from a Superman-like closet of replicas, depicts a goshawk with crimson eyes and scimitar talons.

The goshawk is a large raptor, a bit smaller than a red-tailed hawk. It's known for its aggressive nature; the bird's image once adorned Genghis Khan's war helmet. It's elusive, though, aptly nicknamed the gray ghost. "A goddamn hard bird to find," Reynolds warns.

He should know: Reynolds has spent 42 consecutive summers searching Western forests for goshawks and other raptors, the past two decades on Arizona's Kaibab Plateau. His study area extends from the Grand Canyon's North Rim nearly to the Utah border, encompassing 700 square miles of ponderosa pine, mixed-conifer and spruce-fir ecosystems. He sometimes curses this endless search, which has come to define his career, but each field season he's eager to return. He had heart surgery in 2008 and then was hit by a car while bicycling. Just two months later, he was back at Big Springs.

Reynolds is after more than a peek into goshawks' hidden lives. By studying the health of the individual birds and the habitat they nest and hunt in, he's trying to learn what kind of forest

structure best supports goshawks. If there's one thing he obsesses over more than the birds themselves, it's the management of the forests they inhabit. The hope is that once all of the data he's collected on the Kaibab is analyzed -- a task that Reynolds expects will take years after he retires from fieldwork -- the results will provide additional scientific support for the management guidelines he and his colleagues outlined in the Goshawk Recommendations back in the early '90s.

Reynolds started thinking seriously about forest management while conducting his master's research in Corvallis, Ore. He studied goshawks and northern spotted owls, and each year watched half of his study plots disappear to clear-cuts, and with them half of his birds. "Timber was king in the Forest Service," he says of that era. In 1971, he presented data on the declining bird populations in his plots at a conference, arguing that the rate and style of logging were unsustainable for both forest ecosystems and the federal agency tasked with managing them. Sooner or later, Reynolds believed, the Forest Service would be crippled by environmental lawsuits. It wasn't a mainstream viewpoint at the time: After the presentation, a senior Forest Service official told him that no little bird was going to change how they managed forests.

Undeterred, over the next decade Reynolds formulated "a food web approach to management." His idea was to work backwards from the goshawk to determine how a healthy forest should look and behave, then use logging and controlled fires to move real forests toward that standard. Because goshawks are apex predators -- at the top of their food web -- their success depends on the health of the entire ecosystem. In other words, sustaining the birds means sustaining the squirrels they prey on, the seeds the squirrels subsist on, the forest structure that optimizes production of these seeds, and so on. Build the forest of the goshawk's dreams and, as far as Reynolds could tell, the whole ecosystem would flourish.

In the early '90s, environmental lawsuits seeking stricter protections for the goshawk threatened to restrict and even halt commercial logging in Arizona and New Mexico's national forests. The Forest Service -- with its mission to manage forests for multiple use and timber yields -- was in a tight spot, so it tapped Reynolds to gather data on the health of the Kaibab's goshawk population. Within a year, he was unrolling his sleeping bag at Big Springs, setting up the study on habitat structure and goshawk fitness that he's still working on today.

Soon after, he and a team of biologists and silviculturists developed the Goshawk Recommendations, a conservation plan for the birds, based on what they already knew about the species' food web. Pulling from hundreds of articles in scientific journals, they synthesized the habitat requirements of 14 of the goshawk's key prey species -- including the Steller's jay, cottontail rabbit and tassel-eared squirrel -- to produce a blueprint for an ideal forest. In 1996, the plan was officially adopted by the Forest Service's Southwest Region. From then on, national forests in Arizona and New Mexico were to be managed so that they would eventually mirror that master-image.

It was a very different picture than the one generated by prevailing management practices. During the 1980s, logging on the Kaibab and elsewhere in the Southwest cleared entire stands, leaving just a few mature trees to act as seed banks. Foresters then thinned the regenerating saplings to produce even-aged stands of uniformly spaced trees; it was a classic timber-centric

model designed to increase the rate at which trees are grown and harvested. Outside of these heavily logged areas, the forests became clogged with small trees thanks to fire suppression.

The Goshawk Recommendations instead call for groups of trees with interlocking crowns separated by openings. The groups should be varied in age; that way, when a group of older trees dies, a batch of younger trees is already growing up elsewhere to replace it. The openings serve as flyways and foraging grounds for the goshawk, a sub-canopy hunter, provide natural firebreaks, and offer sunny spaces in which young trees can come up. "(It was) a paradigmatic shift," Reynolds says.

But some environmentalists don't see it that way. To create openings and maintain age diversity, the plan calls for the harvest of some large-diameter, old-growth trees. Reynolds' critics, many with a deep-seated distrust of the Forest Service's timber policies, cite research that suggests that goshawks depend on old-growth forest habitat. In the Goshawk Recommendations, they see just another excuse to cut big trees. Reynolds stands by the approach, though, claiming that generating saleable timber is an added bonus, not a driving objective.

Reynolds hoped that the research he's done would resolve this controversy once and for all. And the numbers do indicate that the Kaibab population is secure -- certainly not going extinct -- and that it fluctuates in response to shifts in prey populations on the Plateau. But the data also suggest that precipitation rates exert a greater influence on goshawk fitness than habitat structure. Without enough water to produce the pine cones that feed the squirrels that feed the goshawks, neither old-growth stands nor groups and clearings will support the Kaibab's hungry population. These preliminary results confound attempts to draw a neat cause-and-effect relationship between forest structure and goshawk health, but they reinforce Reynolds' commitment to managing forests to serve the prey species upon which goshawks depend.

Though the recommendations were adopted 15 years ago, they've been implemented inconsistently, making it difficult to measure their effectiveness. Despite the uncertainties, the Southwest Region still supports the groups-and-openings approach to forest management, and the recommendations currently provide guiding principles for the 11 national forests in Arizona and New Mexico as they develop new forest plans. At the national level, the Forest Service is taking pains to emphasize its commitment to ecologically based management, and the Goshawk Recommendations, with their food-web foundation, offer a concrete example. They've also helped the agency defend itself in multiple lawsuits over the years, and avoid having the goshawk listed as endangered.

"Let them sue," Reynolds says. "The science will hold up in court."

Coffee cups empty, Reynolds' field crew fidgets in their seats, and the meeting draws to a close. "After all these years, I'm still wandering around the woods looking for hawk shit," Reynolds says, and everybody laughs. "I really am pissed off," he insists, but the grin spreading below his big, white mustache betrays him.

Last summer marked the seventh anniversary of Reynolds' intended retirement from fieldwork. But funding came through for a 21st season on the Kaibab and Reynolds couldn't say no. He

insists that this year he'll have less of a hands-on role, but hundreds of nights spent in a sleeping bag at Big Springs imply that, for him, quitting goshawks is easier said than done.

Ally Cofer, a graduate student who's been with the project for eight years, is already halfway out the door, binoculars under one arm and a binder of topographic maps under the other.

"Find a bird," Reynolds says, almost chanting the words.

"I'll try," Cofer replies, half-smiling, like she's hearing a joke for the thousandth time.

Reynolds isn't joking, though. After all these years in the field, he's condensed "Have a nice day" and "Get to work" into a single parting phrase. He lifts his mug and drains one last sip as Cofer steps out into the sun. "Find a bird," he says again, this time to her back.